

SECTION 01007

BUILDING COMMISSIONING FOR DESIGN BUILD 12/01

PART 1 GENERAL

1.1 REFERENCES

The Commissioning of this project shall comply with all federal, state, and local codes, standards, regulations, and ordinances including, but not limited to, the following documents (publications shall be the latest edition available as of the date of contract award, unless otherwise noted):

U.S. DEPARTMENT OF ENERGY (USDOE)

USDOE BOG

Building Commissioning Guidelines

1.2 SUBMITTALS

SD-01 Pre-Construction Submittals

Commissioning Plan; G

SD-06 Test Reports

Functional Tests

SD-07 Certificates

Final Commissioning Report; G

Deficiencies and Resolution List

Field Report

1.3 PERFORMANCE

Provide building commissioning for the [Project Name], under the direct supervision of the Commissioning Authority (CA), in accordance with USDOE BCG and the approved commissioning plan (unless specifically noted otherwise herein). The work includes provision of all materials, equipment, labor, supervision, tools and items necessary for the completion of the commissioning process.

1.3.1 Commissioning Plan

Submit a comprehensive Commissioning Plan that outlines all phases of commissioning for the facility. The plan shall identify the roles and responsibilities of each member of the building commissioning team, as related to commissioning, a list of systems to be commissioned, all functional test procedures, checklists to document the testing, forms for reporting non-compliance, and findings of periodic site inspections. [The plan shall also include all the procedures for owner training sessions and

the information required for producing the Operation and Maintenance Supplementary Information (OMSI) manuals.]

Submit the Commissioning Plan at, or prior to the 100% design submittal.

1.3.2 Commissioned Systems

As a minimum the following building systems and all associated equipment, components, and accessories shall be commissioned:

a. Heating, Ventilation, and Air-Conditioning (HVAC);

Include Supply, Return, and Exhaust fans, Air Handlers, VAV Boxes, Terminal Units, Control Dampers, Duct mounted coils, Boilers, Pumps, Furnaces, Unit Heaters, Air Conditioning Units, Chillers, etc.

b. Automatic Energy Management and Temperature Controls;

Include Direct Digital Controls, Space Temperature & Humidity Controls, etc.

c. Plumbing and Drainage systems;

Include Fixtures, Water Heaters, Circulating Pumps, Water Coolers, Sump Pumps, Booster Pumps, Sewage Lift Stations, Backflow Preventers, etc.

d. Lighting Control systems;

e. Other systems as appropriate for specific project]

Commissioning procedures shall be developed and coordinated under the direction of the Commissioning Authority (CA). The CA shall insure that commissioning activities are included in the Network Analysis Schedule required by Section 01321 Network Analysis Schedules.

1.4 DEFINITIONS

1.4.1 Building Commissioning

The process of achieving, verifying and documenting that the installation and performance of the building systems identified in this section, meet or exceed the specified design criteria and the approved design documents. Commissioning is primarily part of the acceptance process; however, some commissioning activities occur during the design phase.

1.4.2 Commissioning Authority (CA)

An independent (third party) entity, contracted directly to and monitored solely by the General Contractor. The CA shall not be employed by any member of the design, construction, or testing firms active on this project. The CA shall, at the date of contract award, be a current member of good standing with the Building Commissioning Association (BCA), and shall have completed the commissioning of [2] [] buildings with similar systems.

1.4.3 Physical Inspection Process

The on-site inspection and review of related system components for conformance to the approved design documents and Contract requirements.

1.4.4 Functional Performance Testing Process

The documented test of system parameters, under actual or simulated operating conditions.

1.4.5 Deficiencies

Those issues where products, execution, or performance does not satisfy the project specifications and/or the design intent.

1.5 REPORTS

1.5.1 Final Commissioning Report

Provide a Final Commissioning Report, prepared and signed by the CA, which details the actual commissioning procedures performed, inspection and test results, the final version of the deficiencies and resolution list, indicating that all issues discovered through the commissioning process have been verified as resolved.

1.5.2 Deficiencies and Resolution List

Provide a Deficiencies and Resolution List which identifies noted deficiencies discovered as a result of the commissioning process. The list shall include the current disposition of issues and the date of final resolution, as confirmed by the CA. Submit updated copies of the Deficiencies and Resolution List to the Contracting Officer on a [monthly] [____] basis during commissioning.

1.5.3 Field Reports

Provide Field Reports to document site visits, and equipment inspections performed prior to function testing. The field reports shall identify equipment and systems inspected, time and date of inspection, stage of construction, and shall identify any deficiencies noted in the equipment or installation. Submit Field Reports to the Contracting Officer within [5] [____] calendar days of each site visit.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Provide final performance commissioning of systems, beginning only after the appropriate Contractor/subcontractor certifies that the systems are 100% complete and ready for functional testing. The Contractor shall schedule, coordinate, and perform device tests, calibrations, and functional performance test procedures as defined by the Commissioning Authority

3.1 CONSTRUCTION OBSERVATION

The CA shall visit the building site during the construction, at scheduled intervals, to observe the installation progress, with an emphasis on identifying code related issues, compliance with contract documents, conflicts with other trades, and maintenance issues. The CA shall provide, to the Contracting Officer, a written field report on the findings of each visit within 5 working days of each visit.

On-going commissioning status meetings shall be scheduled to occur during the construction phase, to monitor progress and to help facilitate the commissioning process. Contractor representatives will be required to attend these meetings. The CA shall prepare minutes to document the results of the status meetings. [[2] [__] copies of the commissioning status meeting minutes shall be provided to the Contracting Officer within 5 calendar days.]

3.2 COMMISSIONING OF OPERATION AND MAINTENANCE SUPPORT INFORMATION (OMSI)

The CA shall ensure that the required OMSI manuals are prepared and provided in accordance with the requirements of Section 01782 OMSI Manual for Design Build.

3.3 OWNER TRAINING

Training on related systems and equipment operation and maintenance shall not be scheduled to commence until after final performance commissioning has been satisfactorily completed, and systems are verified to be 100% complete and functional.

The CA shall schedule and witness the Owner training sessions by the installing contractors and their vendors. The format for these sessions shall be outlined in the Commissioning Plan [,and shall include requirements for video taping each session for future reference].

3.3.1 [Video Tape Training

The Contractor shall videotape each training session, using VHS format. The quality of video tapes shall be reviewed and approved by the CA prior to final approval of this phase of commissioning. The following items should be considered by the taping team:

- a. Use new VHS tapes, one tape per system session (Classroom and Field training on the same tape if possible).
- b. Allow a minimum of 30 seconds, maximum of 60 seconds, of tape prior to the start of taping.
- c. First speaker to identify session subject, date, project title, and introduce all trainers.
- d. Tape speaker and his subject matter, not trainees. Use the zoom feature, and remember these tapes are to be used for future training reference. Tape for the person watching it on TV, not the trainees sitting in the session.

- e. The use of remote microphone(s) is strongly suggested, especially in noisy field sessions.
- f. Have the person answering questions repeat the question into the microphone prior to answering the question.
- g. Identify each tape's subject on the front of the tape, with the subject, contract number, date, and the trainer's name.]

3.4 FIELD QUALITY CONTROL

The following minimum field quality control items are required and shall be incorporated into the Contractor's Design Documents:

3.4.1 Functional Tests

The CA shall verify system readiness for functional testing procedures prior to start of functional testing. Noted deficiencies shall be documented for future resolution.

Upon receipt of written verification of completion of installation and startup procedures by the Contractor, the CA shall conduct an on-site physical inspection of the specific systems and equipment to verify that the equipment is ready for commissioning.

Upon confirmation of system readiness, the CA shall schedule with the Contractor to perform functional performance tests to verify functional compliance with the project design specifications and design intent documents. The Commissioning Authority shall oversee the process and shall provide the format and documentation of these tests. Functional Test reports shall be submitted within [14] [__] calendar days of the test.

Deficiencies noted during functional performance tests shall be documented on the Deficiencies and Resolution List.

The commissioning process shall be complete when all deficiencies have been corrected, proved to be in compliance with the project specifications, or otherwise resolved to the satisfaction of the Contracting Officer.

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